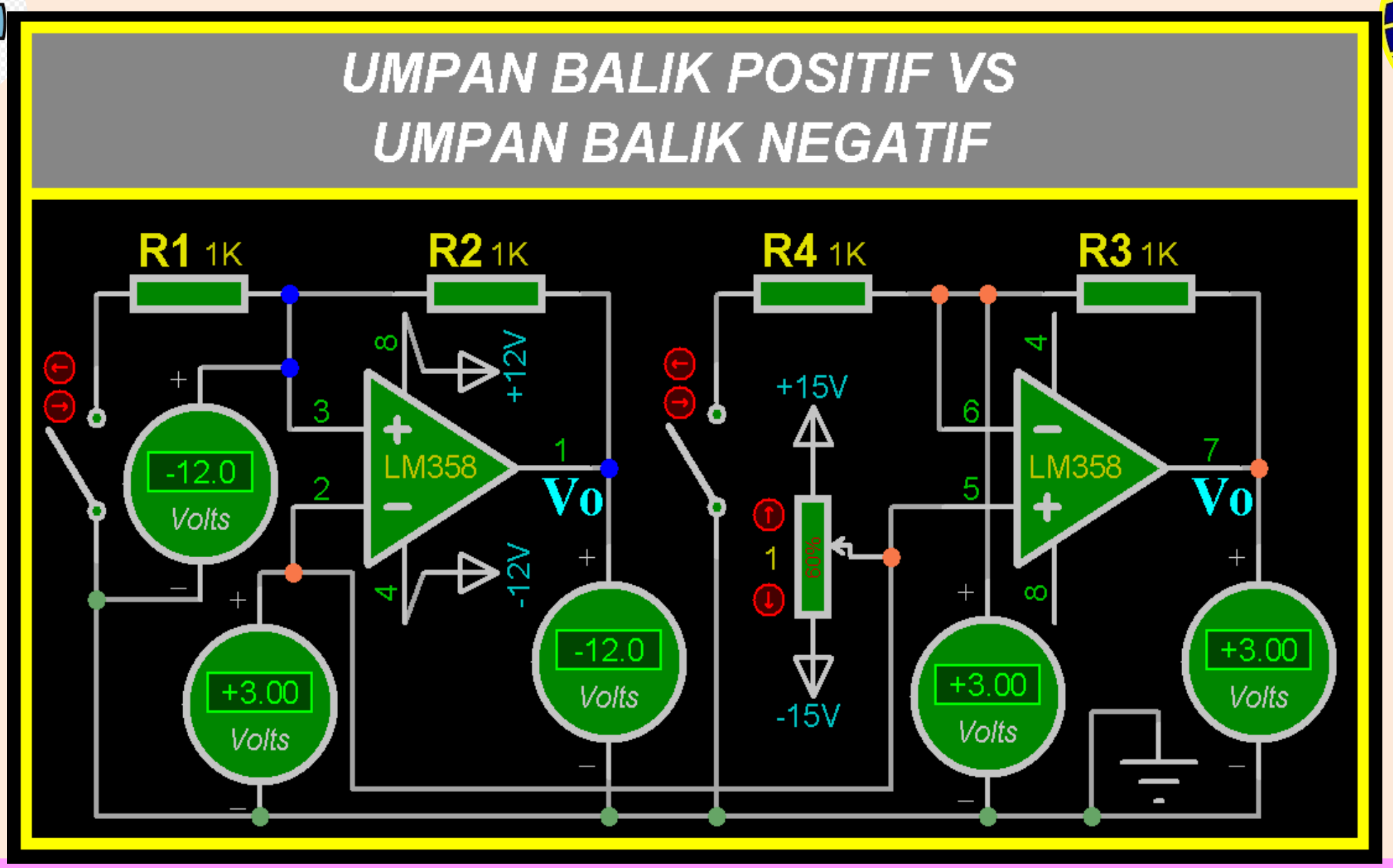
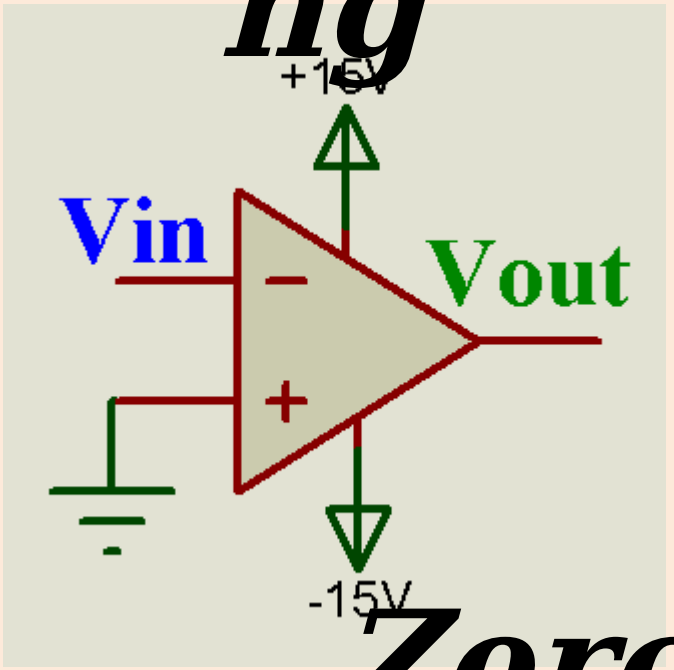
Pembanding *(Comparator)* dengan Umpan balik Positif

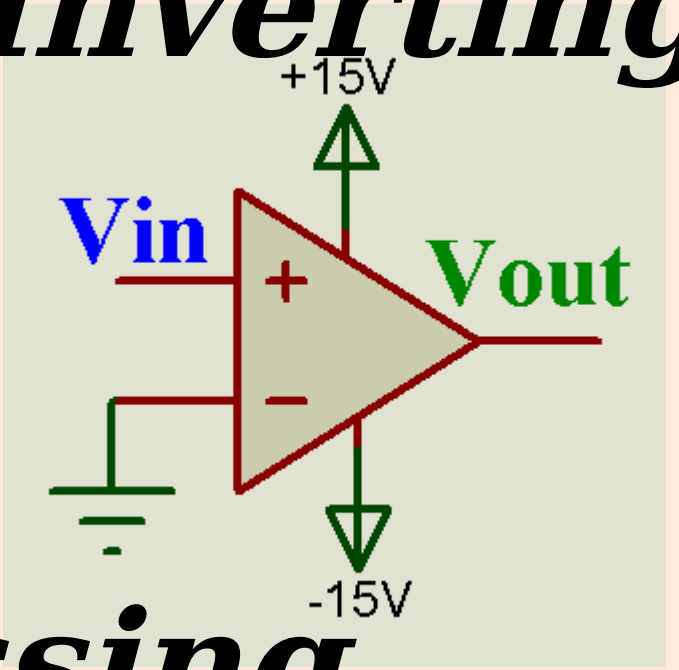
UMPAN BALIK POSITIF VS UMPAN BALIK NEGATIF



Inverting

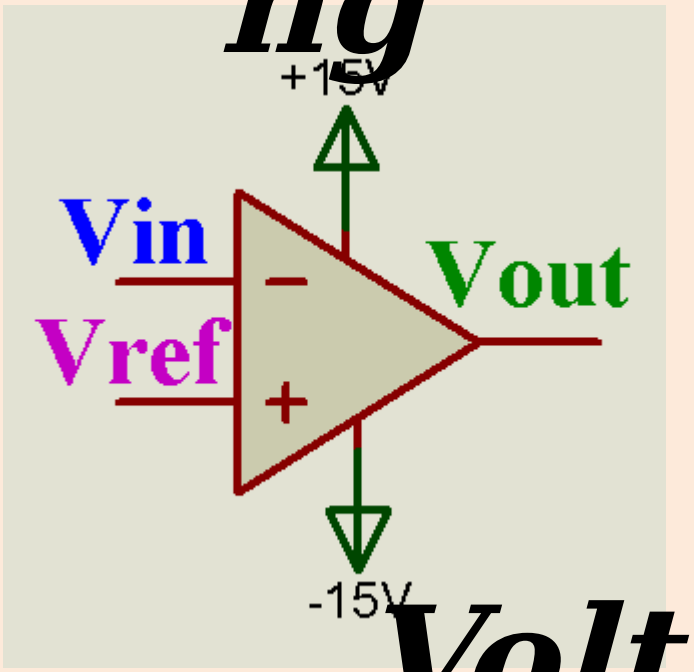


Non Inverting

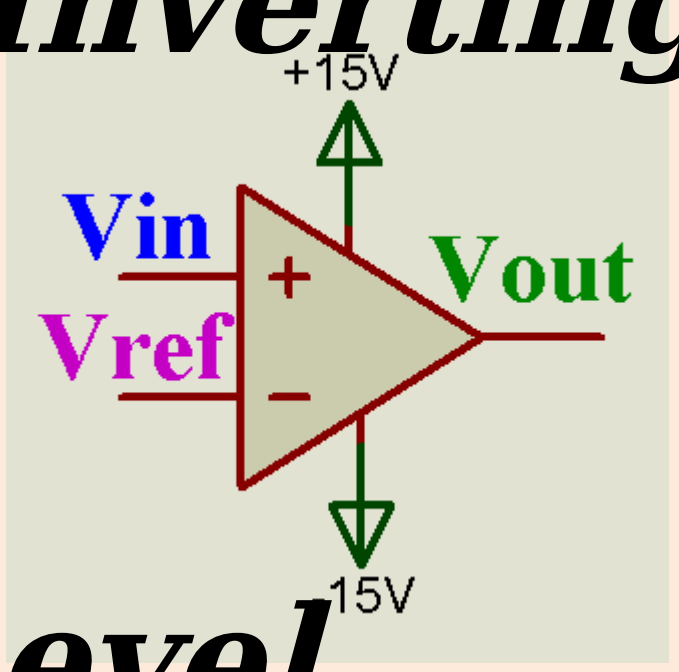


Zero Crossing Detector

Inverting

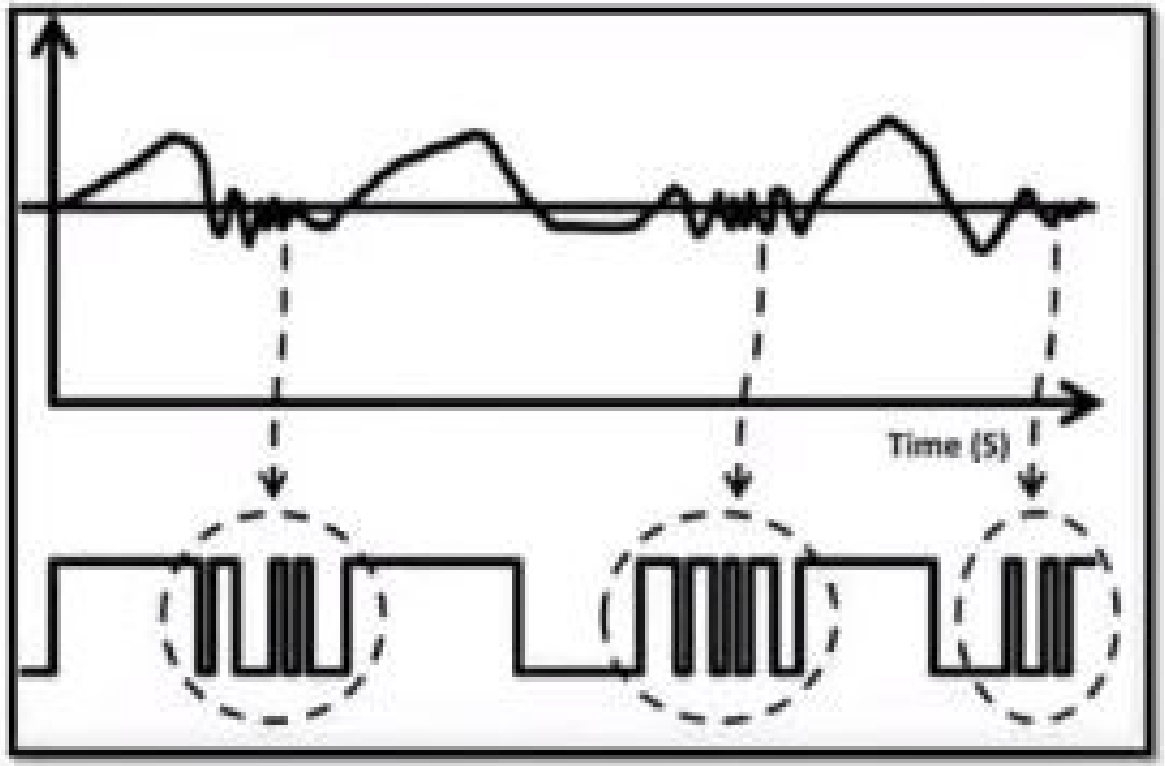


Non Inverting

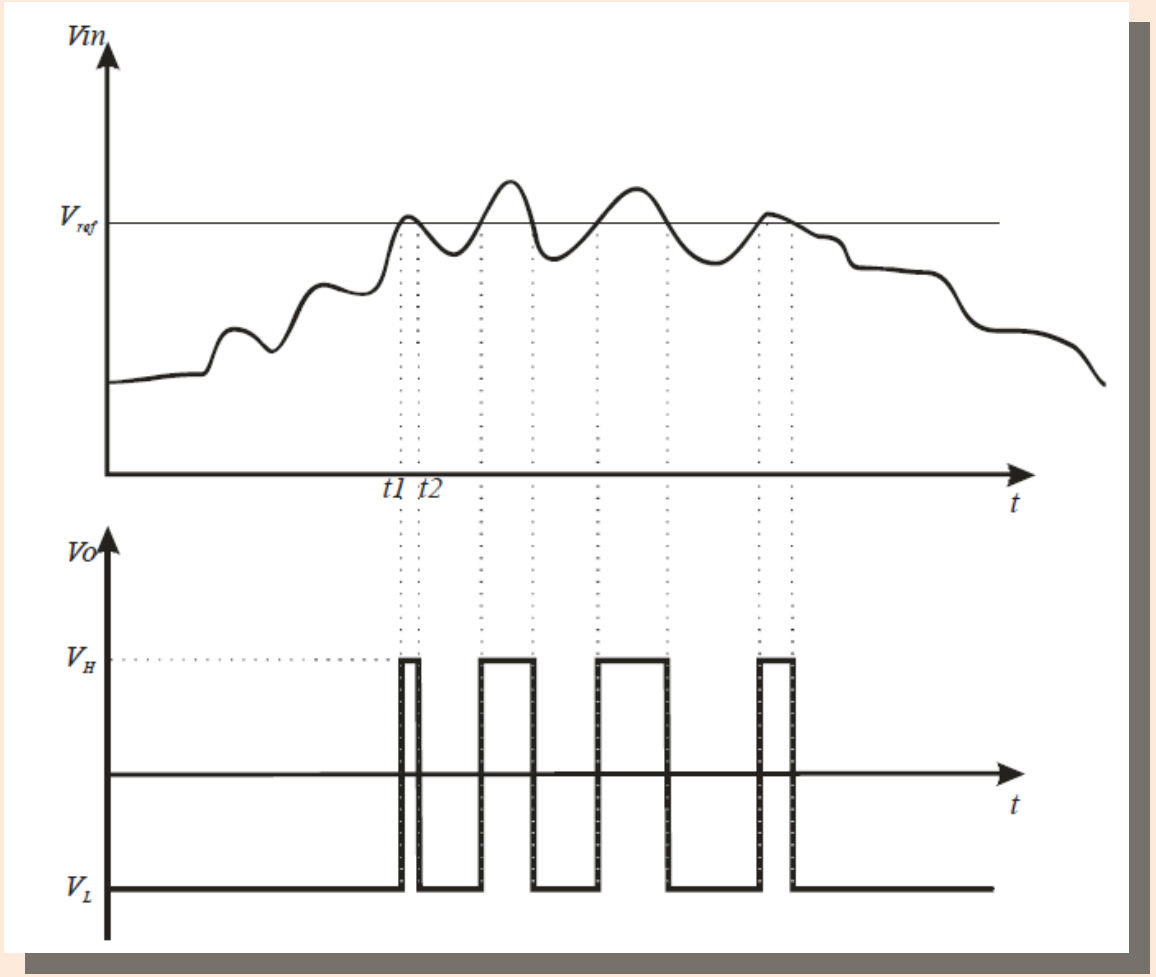


Voltage Level Detector

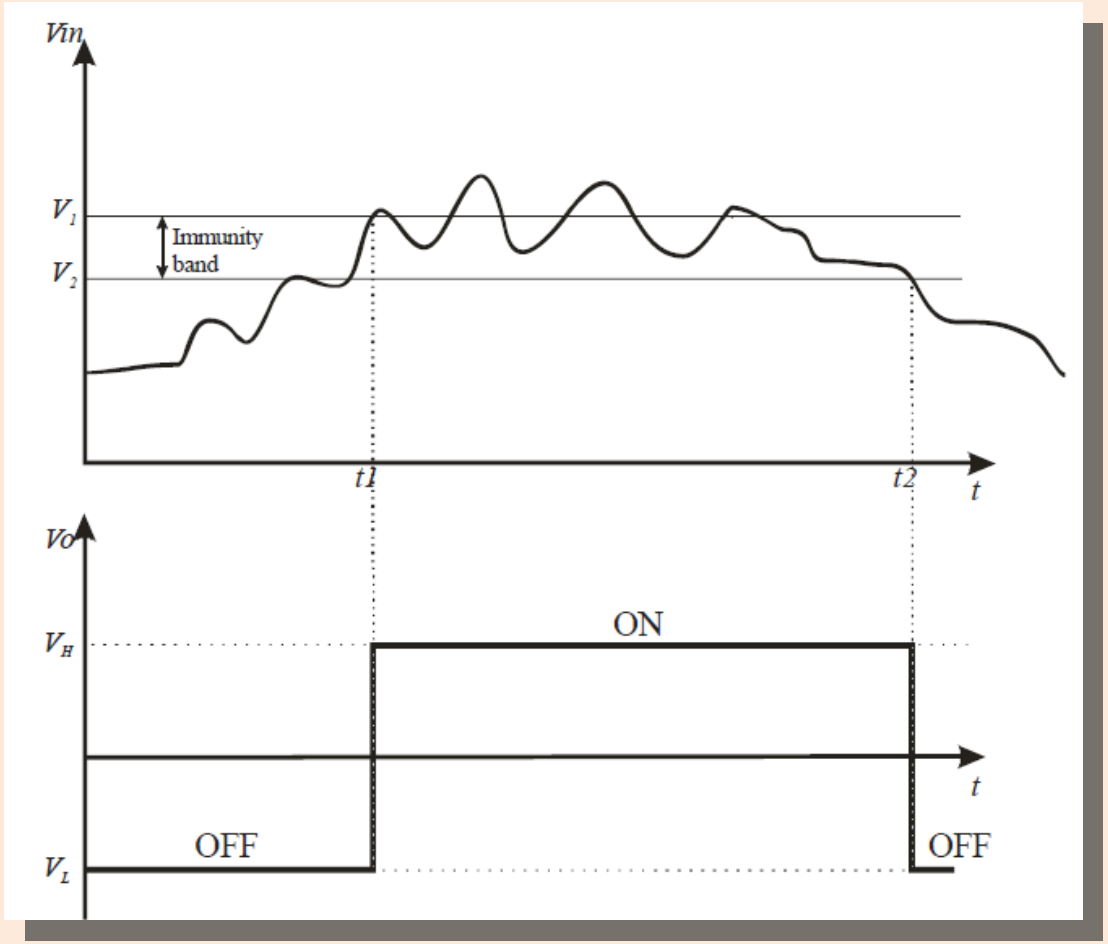
Noise on Comparator Operation



Fluktuasi Sinyal Output akibat Noise pada Sinyal Input

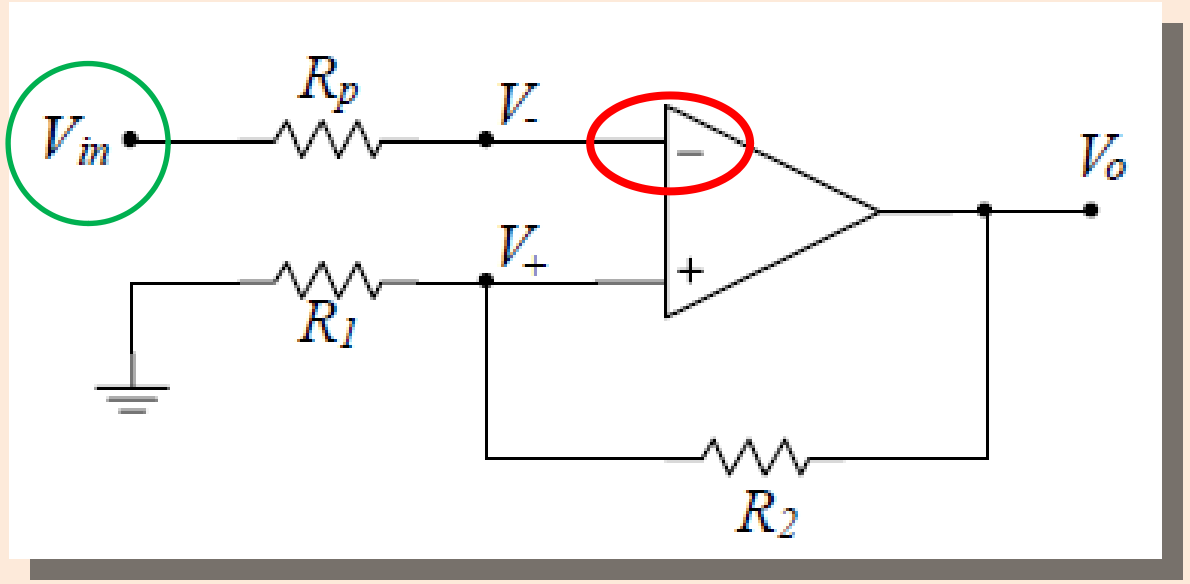


Kestabilan Sinyal Output diperoleh dari Adanya Histeresis pada Komparator



Positive feedback

Inverting Zero Crossing Detector (IZCD) With Hysteresis



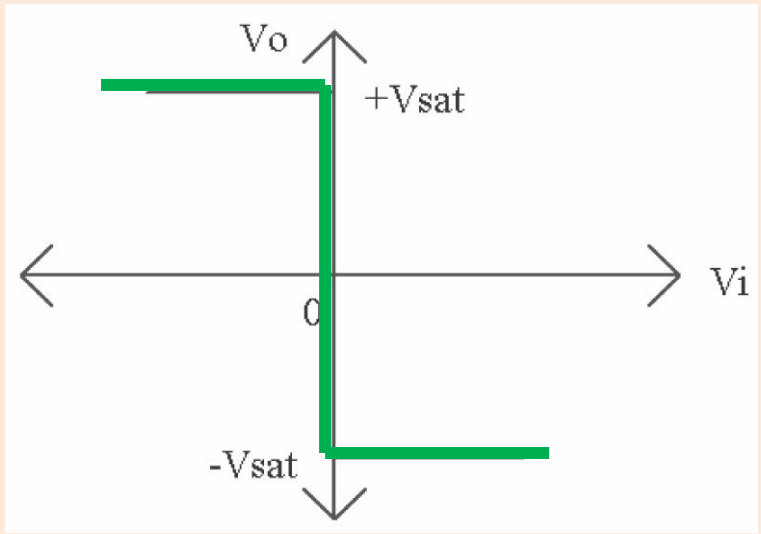
$$V_{TU} \equiv V_H \frac{R_1}{R_1 + R_2}$$

$$V_{TL} \equiv V_L \frac{R_1}{R_1 + R_2}$$

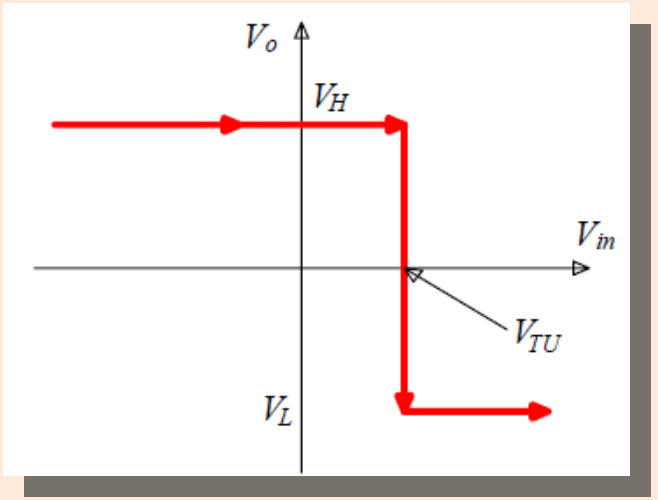
V_H = + Vsat

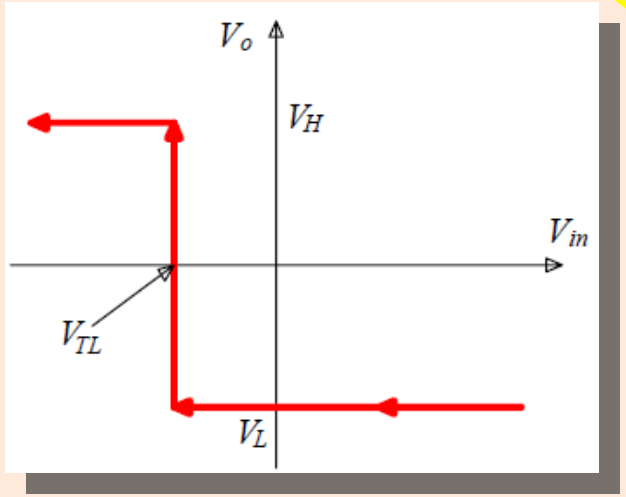
V_L = - Vsat

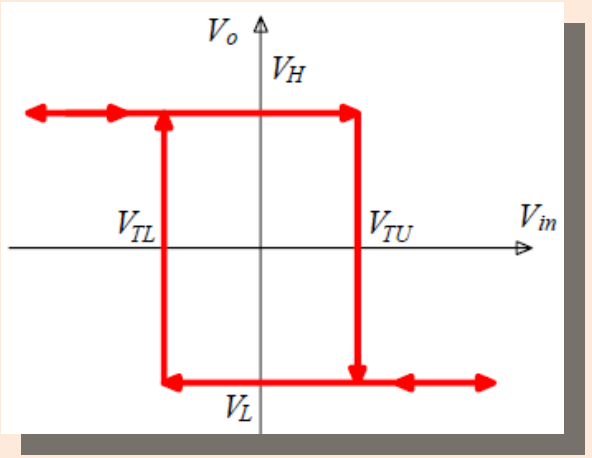
Hysteresis Effect



Karakteristik Input-Output IZCD tanpa Histeresis



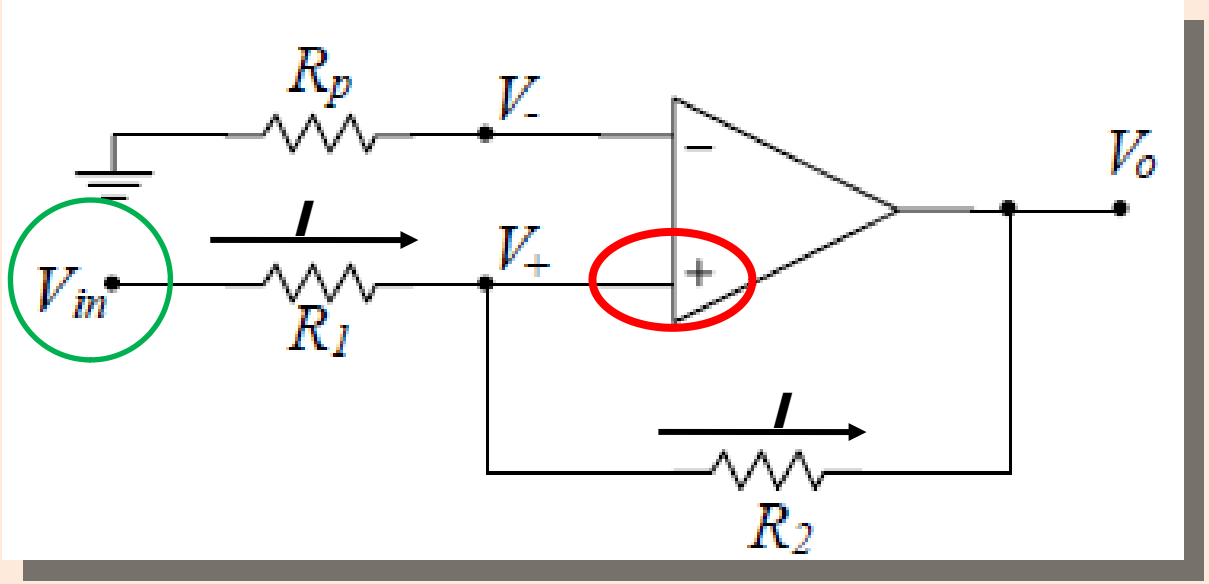




Karakteristik Input-Output IZCD dgn Histeresis

Positive feedback

Non-Inverting Zero Crossing Detector (NIZCD) With Hysteresis



$$V_{TU} = -\frac{R_1}{R_2} V_L$$

$$V_{TL} = -\frac{R_1}{R_2} V_H$$

V_H = + Vsat

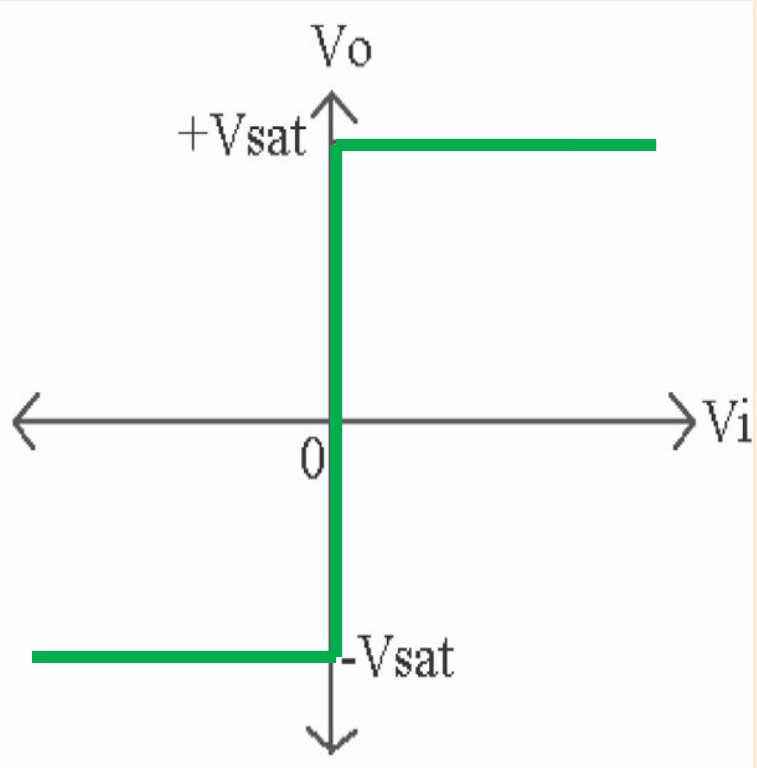
V_L = - Vsat

I = I

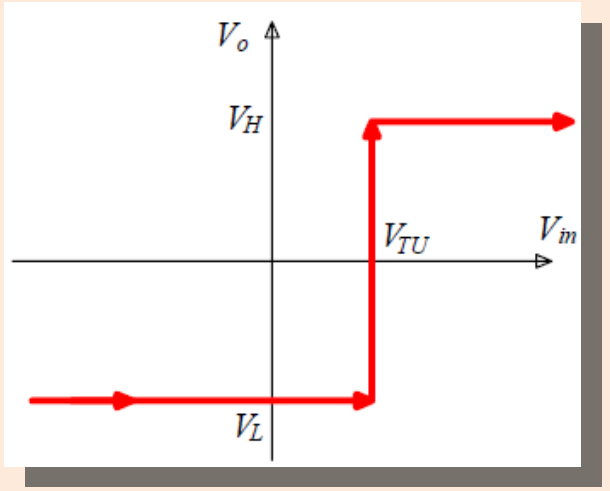
(Vin - 0)/R1 = (0 - Vo)/R2

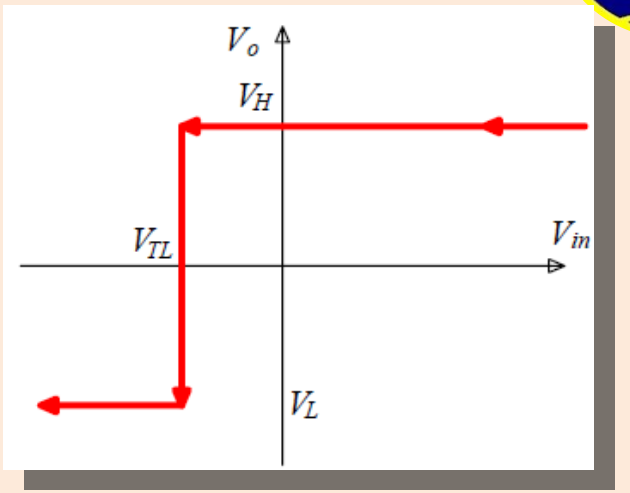
Vin = - (R1/R2) Vo

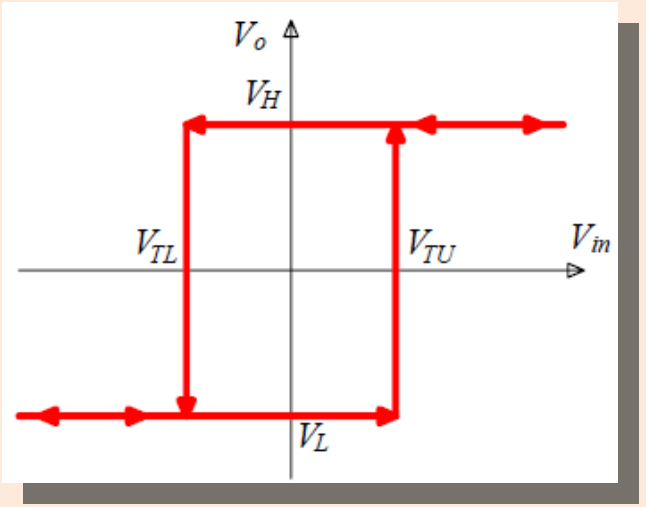
Hysteresis Effect



Karakteristik Input-Output NIZCD tanpa Histeresis



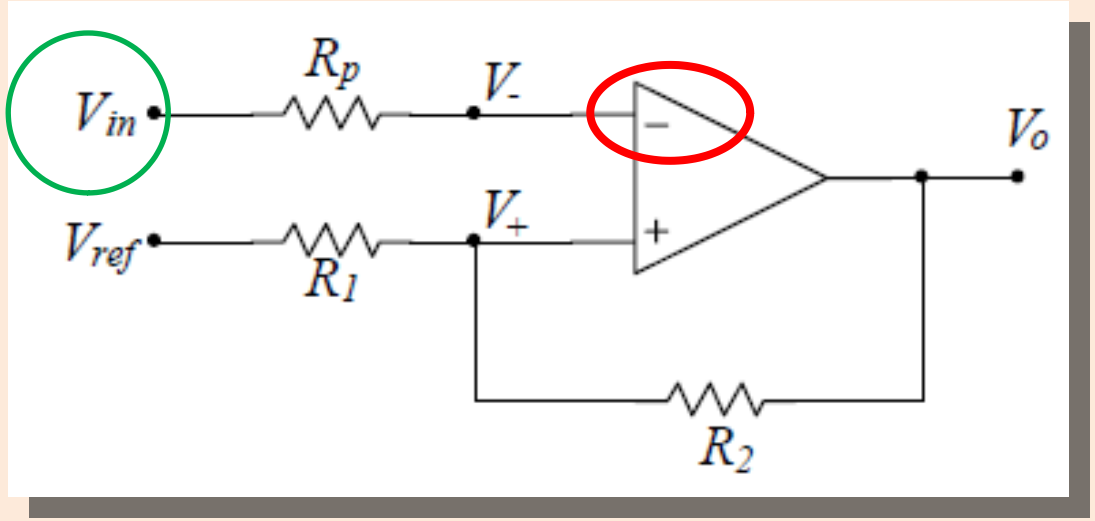




Karakteristik Input-Output NIZCD dgn Histeresis

Positive feedback

Inverting Voltage Level Detector (IVLD) With Hysteresis



$$V_{TU} = V_S + V_H \frac{R_1}{R_1 + R_2}$$

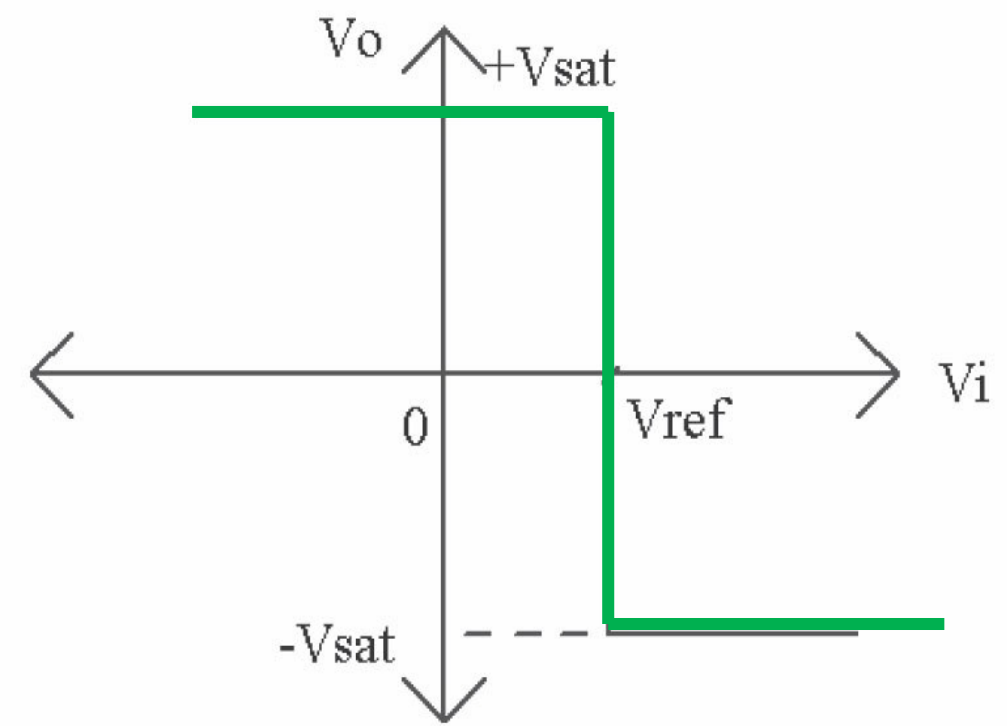
$$V_{TL} = V_S + V_L \frac{R_1}{R_1 + R_2}$$

$$V_S = V_{ref} \frac{R_2}{R_1 + R_2}$$

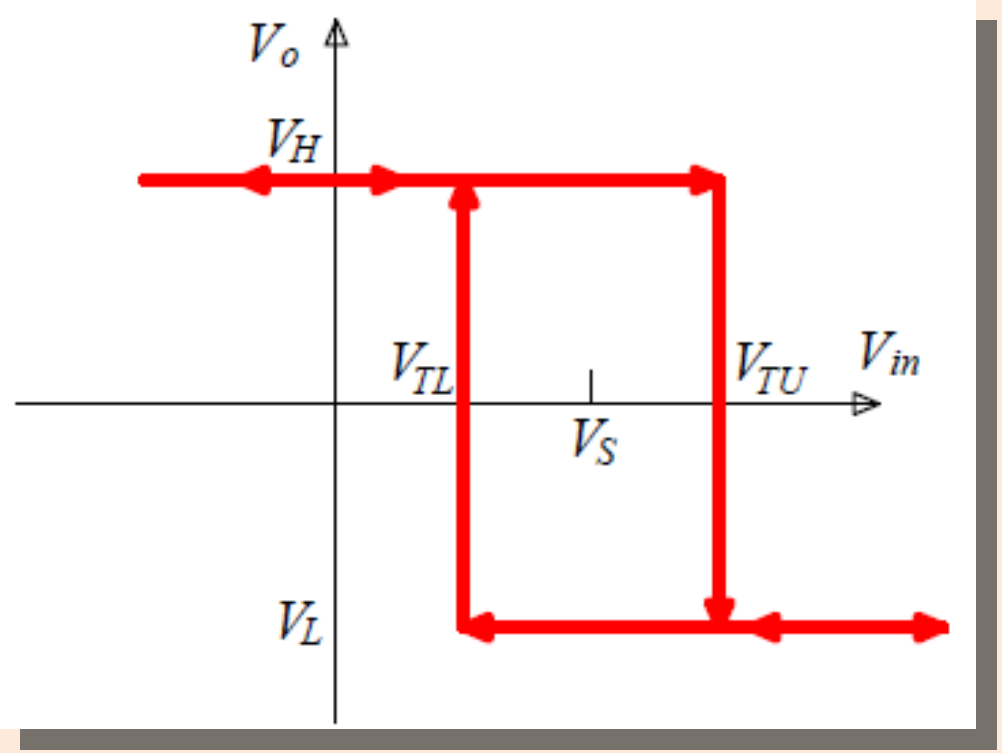
V_H = + Vsat

V_L = - Vsat

Hysteresis Effect



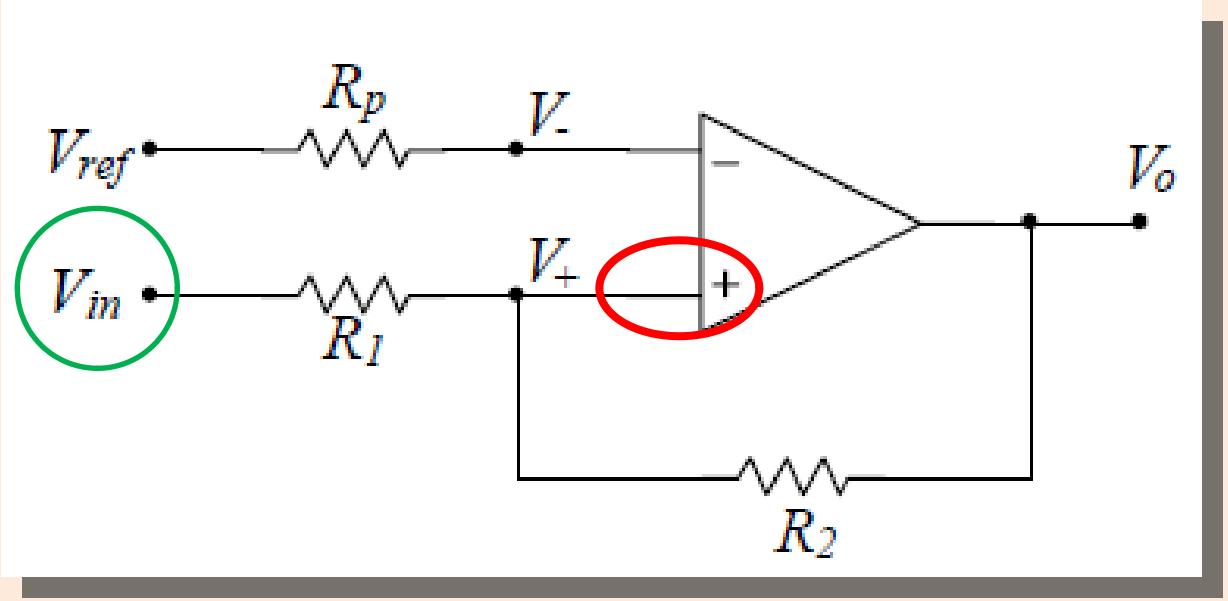
Karakteristik Input-Output IVLD tanpa Histeresis



Karakteristik Input-Output IVLD dgn Histeresis

Positive feedback

Non-Inverting Voltage Level Detector (NIVLD) With Hysteresis



$$V_{TU} = V_S - V_L \frac{R_1}{R_2}$$

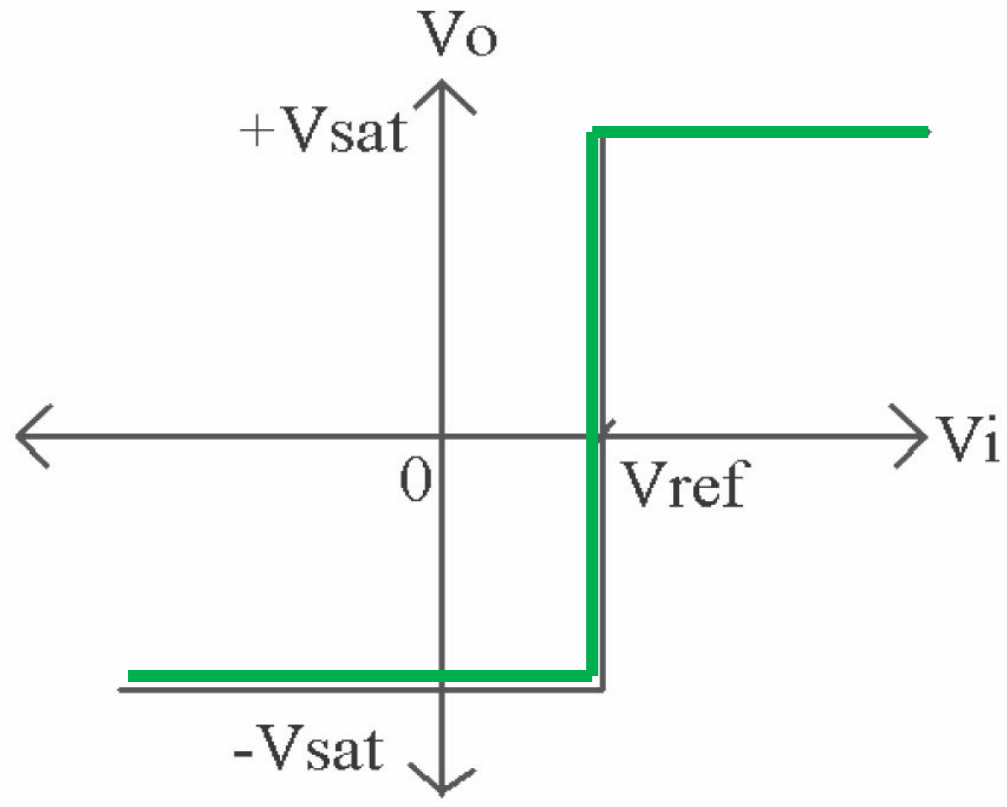
$$V_{TL} = V_S - V_H \frac{R_1}{R_2}$$

$$V_S = \left(1 + \frac{R_1}{R_2}\right) V_{ref}$$

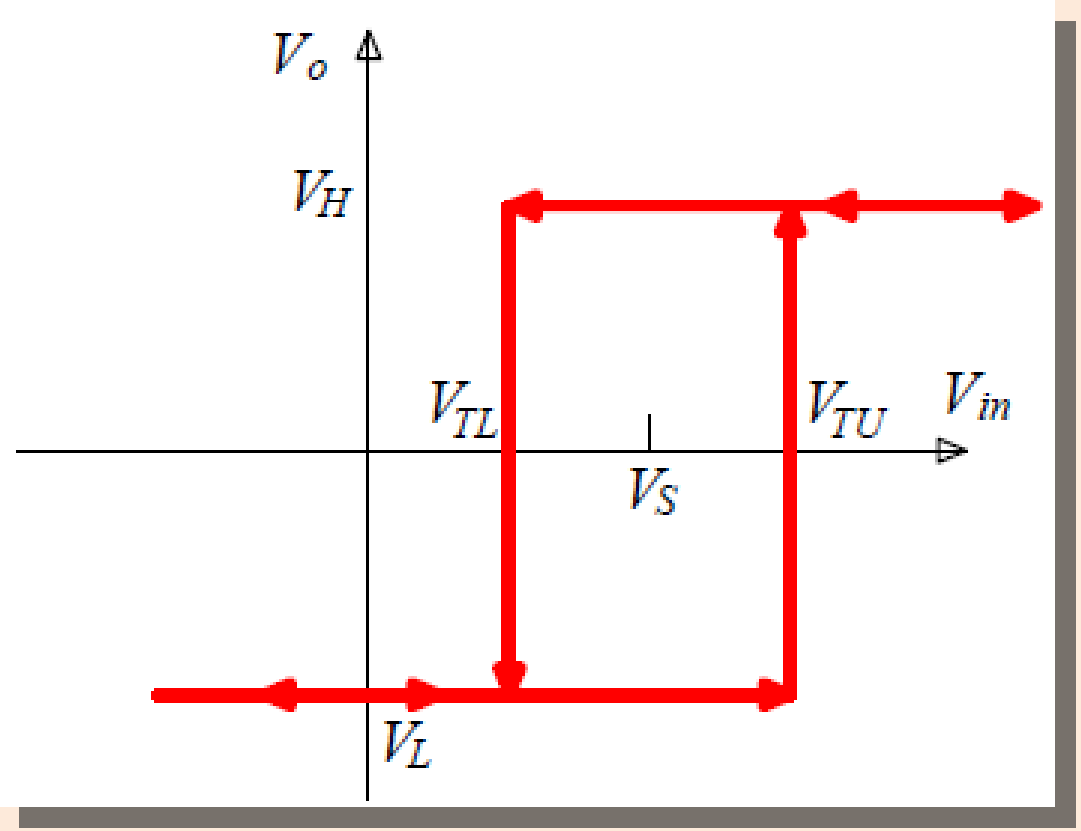
V_H = + Vsat

V_L = - Vsat

Hysteresis Effect



Karakteristik Input-Output NIVLD tanpa Histeresis



Karakteristik Input-Output NIVLD dgn Histeresis